

## Going is good as Ascot upgrades its infrastructure

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Wireless local area networking technology has turned Ascot Race Course into a cutting edge sports facility, following a complete rebuild of the site.

In the most extensive redevelopment of a racing facility in Europe, Ascot implemented a complete voice, video and data unified solution from Cisco to replace its inadequate legacy equipment.

Through its new network and infrastructure, Ascot has enhanced the site functionality and its reputation as one of the foremost race courses in Europe. The £185m new build and technology investment has placed Ascot at the top of its league following a period of being unable to satisfy the demands of site users or to implement new ideas, thanks to decades-old technology.

Ascot Race Course is a business that operates as an infrastructure and support for many smaller businesses, known as stakeholders. These companies each have their own detailed business technology requirements, which must be met by the umbrella of Ascot. The stakeholders that make up Ascot include hospitality partners; Satellite Information Services (SIS), which enables the television of races; emergency services; The British Horse Racing Club; The Jockey Club; The Tote government-run agency; and bookmakers among others.

The companies that operate within Ascot were increasingly demanding the use of wireless local area network technology (WLAN) to increase communication efficiencies within the sprawling site. However, Ascot's technological infrastructure was out of date. Sonia Hamilton, ICT manager at Ascot, says, "The main problem we had was the airwaves. All these people come and go from our site and want to use wireless in some shape or form for mobility around Ascot. "Many of our stakeholders wanted to use wireless Lans but it became apparent that they were going to clash as our infrastructure couldn't support them all."

Ascot's rebuild plan, which has been repeated every 50 to 60 years since the course's inception in 1711, opened a door to rebuild the entire technological structure of the business, Hamilton explains: "As we were going to flatten almost every building in the main site, we had an opportunity to recreate our entire infrastructure. "It seemed prudent while we had that opportunity to get the right cabling in so we could put wireless Lan technology on top, and also so

we could start to use some more of the new technologies coming in today.”

Much of the telephony infrastructure at Ascot had been around for a long time, with cabling from the 1960s, and other parts of the system added in an ad hoc manner as the business's requirements grew. The telephony network at Ascot was based on a Nortel Meridian switch, with Option II handsets. This was spread over two locations with around 500 extensions on the system. On top of that, Ascot had added another 200 separate phone lines coming into the site over the years that were not connected to the Nortel PBX.

As the site at Ascot is spread out over a large area, its legacy data cabling was concentrated in the main buildings as the rest of the site was inaccessible. The Pavilion conference and exhibition site and the Queen Anne building, which is Ascot's main administration area housing up to 75 administration staff, were the only two parts of Ascot wired for data.

Ascot had a minimal amount of wireless technology in operation, between the old stand and the west end of the site. It was used by premier visitors to the location, so on Royal Race Days the Royal Enclosure offices had access and outside of those meets, horse owners and trainers.

Ascot's needs for its new infrastructure were strict. The business needed a robust voice, data and video network, with full flexibility and scalability and most importantly, strong wireless security.

An example of the site's needs is the ever changing influx of people to the location. On a race day 80,000 people can visit the site, while on a non-race day the site may have between six and 1,000 people visiting for hospitality purposes.

Additionally, while on a non-race day only 100 phone lines may be used, on a race day every line available may be in operation. As for televisions, there are upwards of 1,200 screens on site and each of these had to be able to be supported by the new network.

On top of those requirements, whatever solution was chosen had to be proven and already working in the marketplace. Hamilton explains, “We wanted a company that had done this before, who knew what they were doing, and that we knew was going to get there for us. That trust and reliability had to be there.

“We weren't going to be guinea pigs for anybody. We had to know that a particular switch was in the marketplace and was working.”

In 2003, Ascot's own redevelopment team bought in a number of IT consultants from Buro Happold to aid them in the technology project.

The Ascot team had some knowledge of the IT arena and had been following what was happening in the telephony field. Along with consultants with specialties in broadcast and telephony, the team went to look at technology from Avaya, Mitel, Nortel and Cisco.

There were many problems with those suppliers, Hamilton says. "There were practical issues with them, such as how long it would take some to get the handsets rolled out; some seemed to need to be doing it for months. With others, once we worked out how much the handsets we needed would cost, it came to too much. Others did not fully understand the needs of Ascot and were taking a sledgehammer to crack a nut. With others, systems were maybe not robust enough for us and we can't afford to have the system go down. And some were too cornered; once you were in bed with them, you couldn't get out as they tied you in too much."

Cisco was the supplier of choice for Ascot. "Cisco had everything we were looking for," Hamilton says. "It could prove it had done this type of implementation before, and that included the video aspect, our needs for which Cisco grasped. It was also proven to be extremely secure, which was vital for the peace of mind of our shareholders."

Nitin Kapoor, regional sales manager for Southern UK commercial sales at Cisco, handled the project for the supplier. He says, "The Ascot team were very clear they were looking for a single unified communications infrastructure capable of supporting multiple networks and separate business applications in a secure manner. This would allow the integration of voice, contact centres, call prioritisation and mobility in terms of wireless connectivity."

Cisco and Redstone got to work. The first issue was for the partners to develop a thorough understanding of the needs of the stakeholders at Ascot. "You need to understand the demands on the ground to appreciate the needs of the whole business," Hamilton says.

"This part took a lot longer than we expected. I had the telephony part of the implementation in my head already, so that wasn't bad. The Lan spec wasn't too difficult to overcome either. But the wireless aspect took time. As we were being so cutting edge by running so many WLans together, all the stakeholders had to be confident they would get the security they needed."

Assurances were given to all stakeholders in writing that the resultant network would be what was required, and all got on board with the project. Redstone then took over a warehouse in nearby Boreham Wood and built the network offsite. Each stakeholder visited the site to test the network over four months, to the end of February this year.

In the warehouse, the Tote simulated 2,500 transactions per minute over the WLAN to see how the system would handle a big race day, and came away satisfied. Satellite Information Services (SIS) had to be confident that the channels being watched in betting shops from SIS would have the right proprietary information on screen for that particular bookmaker, so William Hill would not get Ladbrooks' television. Other stakeholders pulled plugs to check business continuity. In March this year, the network was taken apart and rebuilt on site.

In August 2005 the cabling began being thrown into the new building as it went up. More was added throughout the implementation as stakeholders realised that the new network would enable them to do more. From October last year, extra functionality and capability requests began trickling in, adding complexity.

Cisco's Unified Communications Solution was used for voice, video and data. At the core of the network, Cisco implementation partner, Redstone Communications, put in 10 Cisco 6509 Catalyst switches for continuity of voice, data and video in the network. This would also ensure that the vast amount of video content for up to seven channels could run to 630 permanent screens around the site. Around the edge of the network, 60 Cisco 3750 switches were implemented for business continuity, all running over power over Ethernet.

For wireless connectivity, two Cisco 3845 ISRs went in, plus two voice gateways. Redstone implemented 240 Cisco Airspace Access Points. Cisco 4400 series wireless controllers were also put into the network, to be used by the Tote for 500 mobile betting stations, effectively turning the race ground into a giant wireless hotspot. Around 35 multi protocol label switching (MPLS) virtual private networks (VPNs) were implemented to cover the 25 to 30 individual stakeholders of Ascot. Hamilton kept around 10 VPNs spare for corporate activities.

Cisco's IP Contact Centre solution was implemented for external communications. Two Cisco Call Manager servers also went in. Then 500 Cisco IP handsets, mostly 7960s and 7940s, were added. These handsets proved to cost no more than the old Nortel phones but had much more functionality, Hamilton says. In early December 2005 the telephony system was changed over. Ascot wanted an early start on the telephone system so staff could get used to it before the busiest day on the phones of every year, the first working day of January, when Royal Ascot tickets traditionally go on sale.

Challenges included overlap in the wireless access points. This is 100%

overlap between WLAN points in the main stand, and 50% outside. More access points are needed to cover more site temporary structures. The broadcast aspect of the implementation also presented challenges, through the sheer number of channels to be broadcast.

Ascot itself now runs on two MPLS VPNs, one for ticketing and turnstiles and another for administration. From the time the network was implemented, Hamilton began rolling out WLANs to the stakeholders one at a time in preparation for a pre-opening day designed to test the system on 27 May. This was requested by The Department for Culture, Media and Sport to test the system before the first Royal Race Day that begins with the Queen's opening of the track on 20 June.

Hamilton says she would do nothing different if she had to go through the implementation again. The result is a network that was delivered on time and that the business already has many plans for building on. Within 12 to 24 months Ascot wants to tag all the Tote equipment that is bought on site for each race day, so that radio frequency identification (RFID) recognised kit is automatically accepted on the system and new kit is flagged and added on.

More ideas for the WLAN include RFID tags on bracelets for children brought onto the site, so parents can easily track them down if they stray. Another RFID idea is entry badges. These collectables will continue to look the same, but will provide greater efficiencies in site management and security.

Ascot also wants to give facilities staff Wi-Fi-enabled PDAs that will enable them to log problems and how and when those have been resolved around the site, for more professional site management. These PDAs are also going to be issued to catering staff so when a private box runs out of champagne, the caterers can order another 20 bottles of Bollinger for box number 246, rather than wander off for an hour to get supplies.

"These are just some of the ways in which we can continue to exploit the wireless network," Hamilton sums up.